RESEARCH, DEVELOPMENT & TECHNOLOGY TRANSFER
QUARTERLY PROGRESS REPORT

Wisconsin Department of Transportation
DT1241 4/2010

INSTRUCTIONS:
Research project investigators and/or project managers should complete a quarterly progress report (QPR) for each calendar quarter during which the projects are active.

WisDOT research program category: ☐ Policy research ☒ Wisconsin Highway Research Program ☐ Other ☐ Pooled fund TPF#		Report period year: 2010 ☐ Quarter 1 (Jan 1 – Mar 31) ☒ Quarter 2 (Apr 1 – Jun 30) ☐ Quarter 3 (Jul 1 – Sep 30) ☐ Quarter 4 (Oct 1 – Dec 31)
Project title: Foundation Movements for Transportation Structures		
Project investigator: James Schneider	Phone: 608-890-2662	E-mail: jamess@cae.wisc.edu
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WisDOT project ID: 0092-09-05	Other project ID:	Project start date: 2/5/2009
Original end date: 2/5/2012	Current end date: 2/5/2012	Number of extensions: 0

Project schedule status:
☐ On schedule ☐ On revised schedule ☐ Ahead of schedule ☒ Behind schedule

Project budget status:

Total Project Budget	Expenditures Current Quarter	Total Expenditures	% Funds Expended	% Work Completed
$109,893.00	$10,226.26	$42,718.77	39%	30%

Project description:
The overall research objective of this study is to produce a document summarizing simplified design procedures for evaluation of foundation movements for transportation structures within the LRFD framework. Recommendations for the measurement and selection of input parameters for those design procedures will also be provided.

Progress this quarter (includes meetings, work plan status, contract status, significant progress, etc.):
Three project sites are now fully instrumented and remote data acquisition systems are in place to monitor the variations of the strain applied to columns and abutment walls of the structures.

Site 1
Site 1 is located at the Mitchell Interchange. Sister bar strainmeters and the datalogger were installed at site 1 in April. Large amounts of rain and backfilling around the base of the structure resulted in water collection along the pier line. The datalogger was subsequently destroyed by unanticipated high water on the site and no meaningful data were recovered. This experience has led to adjustment in installation practices of the datalogger, most significantly an increase in measures to waterproof the protective case. Replacing the remote data acquisition system at this location has increased spending for the site, as outlined below. Total expenditures for this site have risen to $3,634.50, which exceeds the expected budget of $2000.00.
($1216.60+shipping) Model 4911 VW Rebar Strainmeter, "Sister Bar" #4 rebar with 20ft 02-250V6-E cable attached to each
($1083.00+shipping) Model 8002-4-1 LC-2 Datalogger, 4-channel, RS-232, Datalogger ID 1005651
($89.95) Pelican™ iM2200 Storm Case iM2200-Yellow
($1083.00+shipping) Model 8002-4-1 LC-2 Datalogger, 4-channel, RS-232, Datalogger ID 1005650
($72.00+shipping) Blue PVC Cable, 0.250", 2 twisted pairs, 100'

($89.95+shipping) Pelican™ iM2200 Storm Case iM2200-Yellow

Site 2
Site 2 is located at bridge B-67-325. Sister bar strainmeters were installed at site 2 on 5/25/2010. The strainmeters were located in the corners of the column 2 of the pier supporting structure B-67-325.
Instrumentation of the site includes four Geokon sister bar strain gauges with a remote data acquisition system and protective case, as outlined below:
($1216.60+shipping) Model 4911 VW Rebar Strainmeter, "Sister Bar" #4 rebar (with 20ft 02-250V6-E cable attached to each)
($1083+shipping) Model 8002-4-1 LC-2 Datalogger, 4-channel, RS-232, Datalogger ID 1005653
($89.95) Pelican™ iM2200 Storm Case iM2200-Yellow

Site 3
Site 3 is located at bridge B-67-325. Instruments for this site were installed in the north abutment wall of the structure in a square configuration to record differential loads along the exposed and earth-bearing sides of the wall. The instrumentation cost for this site is equal to the expenses accrued at site 2 and are summarized below. The cost incurred at for this location exceeds the $2000.00 budget by 19%.
($1216.60+shipping) Model 4911 VW Rebar Strainmeter, "Sister Bar" #4 rebar (with 20ft 02-250V6-E cable attached to each)
($1083+shipping) Model 8002-4-1 LC-2 Datalogger, 4-channel, RS-232, Datalogger ID 1007644
($89.95+shipping) Pelican™ iM2200 Storm Case iM2200-Yellow

Site Visits Included:

Date	Site	Activities
4/1/2010	1	install strainmeters (sensor IDs: 4643, 6804, 6805, 6806)"
4/9/2010	1	install datalogger (ID 1005651)
5/25/2010	1	uninstall submerged datalogger (ID 1005651), begin cable splicing
5/25/2010	2	install strainmeters (sensor IDs: 6904, 6905, 6906, 6907)"
5/26/2010	1	finish cable splicing
6/4/2010	1	install datalogger (ID 1005650)
6/4/2010	2	install datalogger (ID 1005653)
6/4/2010	3	install datalogger (ID 1007644)
6/4/2010	3	install strainmeters (sensor IDs: 6909, 6910, 6911, 6912)"
6/14/2010	2	download data, install fresh batteries"
6/14/2010	3	uninstall datalogger (ID 1007644)
6/18/2010	3	attempt made to install datalogger but cables buried
6/22/2010	1	download data, install fresh batteries"
6/22/2010	2	download data
6/22/2010	3	install datalogger (ID 1007644)

Anticipated work next quarter:
Surveying of the structures to establish a base reading will be completed. Information gathered by the survey will be correlated to the site survey data collected in conjunction with construction activities by the site engineer/representative. This overlap will facilitate error reduction and better define the baseline survey points.

Circumstances affecting project or budget:
Instrumentation and travel costs are exceeding those planned in the budget. Many more trips to each site have been required than anticipated, and additional casings have needed to be purchased to protect the equipment from construction activities. Changes in student researchers has delayed databse summary and literature review report.

Attach / insert Gantt chart and other project documentation

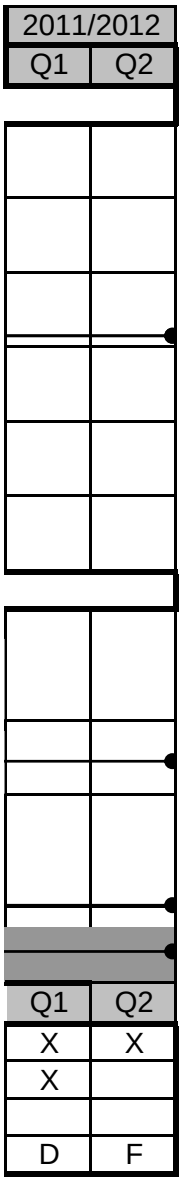
FOR WISDOT USE ONLY

Staff receiving QPR:	Date received:
Staff approving QPR:	Date approved:

	Oct 2008 - Sept 2009				Oct 2009 - Sept 2010				Oct 2010 - Sept 2011			
Activity	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Task 1 - Literature Review / Database development & interpretation												
Commence Project			X									
Develop database of load tests												
Analyze existing methods												
FE parametric studies												
Develop list of potential field sites												
Assess appropriate instrumentation												
Task 2 - Field monitoring and interpretation												
Field testing for shallow foundations												
Field testing for deep foundations												
Field testing for lateral piles analysis												
Data compilation and analysis												
Reporting	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Quarterly			X	X	X	X	X	X	X	X	X	X
POT Review									X			
Literature Review									D	F		
Final Report												

D = Draft Report; F = Final Report

Project not started until February 2009


2011/2012
Q1
Q2
Q1
Q2
X
X
X
D
F